



Tucker, R. P., O'Connor, R. C., and Wingate, L. R. (2016) An investigation of the relationship between rumination styles, hope, and suicide ideation through the lens of the integrated motivational-volitional model of suicidal behavior. *Archives of Suicide Research*, 20(4), pp. 553-566.

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Deposited on: 28 March 2017

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Running Head: IMV MODEL OF SUICIDE, RUMINATION, AND HOPE

An Investigation of the Relationship Between Rumination Styles, Hope, and Suicide Ideation
Through the Lens of the Integrated Motivational-Volitional Model of Suicidal Behavior

Abstract

Objectives: To investigate the roles specific ruminative styles (brooding and reflection) and hope play in the Integrated Motivational-Volitional (IMV) model of suicidal behavior.

Methods: Participants were students from a large US state university who were selectively

sampled for the experience of recent suicide ideation. **Results:** Results of a bootstrapped moderated mediation model indicated that defeat had a direct effect on suicide ideation but not

an indirect effect on suicide ideation through entrapment. Brooding, but not reflection, strengthened the relationship between defeat and entrapment. Hope weakened the relationship

between entrapment and suicide ideation. **Conclusions:** Implications for the assessment and treatment of suicide-risk and future research directions are discussed.

Keywords: Suicide, Rumination, Hope, Defeat, Entrapment, Integrated Motivational-Volitional (IMV) Model of Suicidal Behavior

An Investigation of the Relationship Between Rumination Styles, Hope, and Suicide Ideation
Through the Lens of the Integrated Motivational-Volitional Model of Suicidal Behavior

Recently released data regarding the worldwide prevalence of suicide demonstrates the importance of continued work investigating why people die by suicide. In 2013, over 41,000 individuals lost their lives to suicide in the United States (Drapeau & McIntosh, 2015).

Worldwide, it was estimated that over 800,000 individuals die by suicide annually. Scholars argue that creating and testing theoretical models that address why the desire for and ability to enact suicide develops is a key suicide prevention endeavor (Joiner, 2005, O'Connor & Nock, 2014). Over the last decade, prominent theoretical frameworks of suicide have been developed and are beginning to be tested, including the Interpersonal Theory of Suicide (ITS; Joiner, 2005; Van Orden et al., 2010), the cognitive model of suicidal behavior (Wenzel & Beck, 2008), and an ideation to action framework of understanding how suicide ideation transitions into suicidal behavior (Klonsky & May, 2014). Importantly, the Integrated Motivational-Volitional (IMV; O'Connor, 2011) model of suicidal behavior has begun to accumulate empirical validation as a theoretical understanding of the suicidal mind and why people die by suicide.

The IMV model of suicidal behavior is a three-phase, diathesis-stress framework that attempts to explain the etiology of suicide ideation and suicidal behavior (see O'Connor, 2011 for a description and schematic of this model). The pre-motivational phase details background biological factors (e.g., genetic vulnerability) and life events (e.g., loss or relationship difficulties) that formulate a diathesis for suicidal behavior. The motivational phase details how suicide ideation and intent for suicide emerge. The model proposes that suicide ideation develops from feelings of entrapment (i.e., feeling trapped or stuck due to life circumstances and feeling powerless to change aspects of oneself) intensifying to the point that suicide is seen as the only

viable way of escaping this entrapment. These feelings of entrapment are fostered by conceptions of defeat (feelings of dejection and inability to handle life's stresses). That is, among people who have a predisposition, feelings of defeat can lead to feelings of entrapment, which can then lead to suicide ideation and intent. The volitional phase details how ideation and intent transition to suicidal behaviors.

The IMV model of suicidal behavior identifies threat to self moderators, motivational moderators, as well as volitional moderators. Threat to self moderators are defined as factors that facilitate the transition of conceptions of defeat to feelings of entrapment. These moderating variables include concepts that deplete (or enhance) the ability to cope with negative life circumstances and intensify feelings of defeat (e.g., deficient coping styles, poor social problem solving, autobiographical memory biases, and ruminative processes) and facilitate the transition from feeling defeated to feeling trapped. Motivational moderators are defined as factors that facilitate the transition of feelings of entrapment to suicide ideation and intent. Motivational moderators include variables that enhance the notion that suicide is the only option for dealing with life circumstances (e.g., thwarted belongingness and perceived burdensomeness, thwarted goal attainment, and specific future thinking styles/contents). Volitional moderators are variables that enhance the likelihood and ability to enact suicide when the desire for suicide is present. These include acquired capability, access to lethal means for suicide, impulsive personality, planning and practicing a suicide attempt, and imitation of suicide attempts/deaths of others.

Evidence in support of the IMV model of suicidal behavior is strong. In a study of inpatients hospitalized following a suicide attempt, O'Connor, Smyth, Ferguson, and Ryan (2013) demonstrated moderately strong correlations between suicide ideation and both defeat and entrapment. Univariate analyses indicated that both defeat and entrapment predicted

subsequent hospitalization for one or more suicide attempts over a four-year follow-up. Most notably, multivariate analyses revealed that feelings of entrapment at time one was a significant predictor of subsequent suicide attempts. In the context of entrapment, the typically prominent suicide risk factors of suicide ideation, symptoms of depression, and feelings of hopelessness and defeat were rendered non-significant in the same multivariate model predicting suicide attempts.

Research has also provided support for specific moderation processes as outlined by the IMV model of suicidal behavior (i.e., threat to self and motivational moderators). O'Connor and Williams (2014) demonstrated that reductions in positive future thinking are likely influenced not only by negative mood states, but by a brooding cognitive style (a ruminative cognitive process) and conceptions of defeat and entrapment. This provides support for the hypothesis that rumination may influence the relationship between conceptions of defeat and entrapment as a relative absence of positive future thinking would likely be necessary for conceptions of entrapment to develop. Difficulty reengaging in new goals (a potential motivational moderator variable) has been shown to predict subsequent suicide attempts over a two year follow-up in patients hospitalized after a suicide attempt (O'Connor, O'Carroll, Ryan, & Smyth, 2012). This research points to the importance of continued work investigating the relationship between positive future thinking styles and predictors of suicide such as feelings of entrapment and suicide ideation.

As the IMV model of suicidal behavior is a fairly new theoretical framework with promising supportive evidence, more work to investigate suicide risk through the lens of this model is warranted. Continued research is needed that details the role and relationship of prominent risk/resiliency factors of suicide to the key components of the IMV model of suicidal behavior (such as feelings of defeat and entrapment). Three specific risk and resilience factors

that should be examined in the context of the IMV model of suicidal behavior are the ruminative processes of brooding and reflection, as well as the positive psychological concept of hope.

The ruminative styles of brooding and reflection have been studied in relationship to suicide ideation. Brooding is defined as the critical judgment of the consequences of one's negative mood state, while reflection is defined as the pondering about one's mood in order to determine causes of current distress and develop solutions to fix this distress (Treynor et al., 2003). Research has consistently linked brooding to suicide ideation in varying samples and with both cross-sectional and prospective research designs (Miranda & Nolen-Hoeksema, 2007; Morrison & O'Connor, 2008a; O'Connor & Noyce, 2008). Reflection on the other hand has been found to be unrelated or negatively related to suicide ideation in some research (Crane, Barnhofer & Williams, 2007; O'Connor & Noyce, 2008) but positively predictive of suicide ideation in other cross-sectional (Tucker et al., 2014) and prospective studies (Miranda & Nolen-Hoeksema, 2007).

The IMV model of suicidal behavior directly posits the importance of understanding the effect of ruminative processes on the relationship between the key construct of defeat and entrapment. O'Connor (2011) posits that ruminative processes enhance the likelihood that feelings of defeat intensify to the point that an individual feels trapped and unable to cope with life's circumstances. This theorized moderation effect seems likely, as the broad construct of rumination intensifies the effect that perceived stress has on suicide ideation (Cole et al., 2015; Morrison & O'Connor, 2008b), and brooding has been related to decreased positive future thinking (O'Connor & Williams, 2014).

Along with the potentially important role of brooding and reflection in the IMV model of suicidal behavior, hope is a key protective factor of suicide that may influence IMV constructs.

Hope, as defined in the Hope Theory (Snyder, 2002; Snyder, Harris, Anderson, & Holleran, 1991), is a cognitive construct that consists of three goal-related elements: 1) setting goals, 2) identifying strategies that can be used to achieve goals (pathways), and 3) the motivation to achieve goals (agency). Hope has been empirically related to multiple indicators of psychological adjustment, including the ability to cope with stress (Affleck & Tennen, 1996; Tennen & Affleck, 1999), symptoms of depression (Geiger & Kwon, 2010), and interpersonal predictors of suicide (Davidson, Wingate, Rasmussen, & Slish, 2009). Hope has also predicted the level of suicide ideation intensity in a general college population as well as independent samples of American Indian/Alaska Native (AI/AN) and African American young adults (Davidson et al., 2009, O’Keefe & Wingate, 2013; Tucker et al., 2013).

Given the research findings that link hope and the desire for suicide, it is reasonable to suggest that hope may play a particularly important role in the IMV model of suicidal behavior. O’Connor (2011) posits that elements of future thinking and goal attainment moderate the relationship between feelings of entrapment and suicide ideation. As hope entails a future time perspective and goal-related cognitions (i.e., thinking in the future about desired goals and how to obtain them), it stands to reason that hope may serve as a motivational moderator in the IMV model of suicidal behavior and weaken the entrapment to suicide ideation relationship.

The current study sought to determine the role that brooding, reflection, and hope play in the IMV model of suicidal behavior. Consistent with the IMV theory, it was hypothesized that defeat would be indirectly related to suicide ideation through feelings of entrapment. Brooding and reflection were hypothesized to independently serve as threat to self moderators of the defeat to entrapment relationship. Additionally, it was hypothesized that hope would serve as a motivational moderator of the entrapment to suicide ideation relationship. More specifically, it

was hypothesized that the testing of two moderated mediation models (see Figure 1) would result in the three following outcomes: 1) feelings of defeat would have an indirect effect on suicide ideation through increased feelings of entrapment, 2) both subtypes of rumination would moderate (intensify) the relationship between feelings of defeat and entrapment with brooding demonstrating a stronger moderating effect than reflection, and 3) increased hope would moderate (buffer) the effect feelings of entrapment have on suicide ideation.¹

Method

Participants

Participants were 174 students (77.6% female, 22.4% male) from a large state university in the United States who were selectively sampled for the experience of recent suicide ideation (see procedure). Participant ages ranged from 18 to 54, with a mean age of 19.65 years. The majority of participants (83.3%) self-identified as Caucasian, 10.9% as American Indian/Alaska Native, 6.9% as African American, 5.2% as Hispanic or Latino/Latina, 5.2% as Asian/Pacific Islander, and one participant (.6%) indicated "other" as his or her ethnicity. A total of 36 participants (20.7%) indicated some level of suicide ideation in the week prior to participation.

Materials and Procedure

Demographics Questionnaire. Demographic information included questions about ethnicity, age, and sex.

¹ Given that entrapment is sometimes operationally defined having two specific feelings of entrapment, (feeling powerless to change an aspect of the self) and external (feeling trapped by life's circumstances), we planned to explore whether there would be merit in pursuing this distinction in our primary analyses. If data suggested a lack of empirical evidence for this distinction in the current sample, we would proceed with total entrapment scores in all main analyses in the interests of parsimony.

Revised Trait Hope Scale (HS-R2; Shorey & Snyder, 2004). The HS-R2 is an 18-item self-report measure of hope as defined by Snyder's (2002) Hope Theory. The HS-R2 contains three subscales: goals ("I clearly define the goals that I pursue"), pathways ("I rarely get stuck finding a solution"), and agency ("I have what it takes to get the job done"). Each subscale is comprised of six items. Scores are rated on an eight-point Likert-type scale ranging from 1 (*Definitely false*) to 8 (*Definitely true*). Higher scores indicate higher levels of hope and its components. Research using the HS-R2 has reported the measure's total score as it reflects levels of hope, as well as all three subscales individually (Geiger & Kwon, 2010; Tucker et al., 2013). As the current study broadly investigated how hope may serve as a motivational moderator in the context of the IMV model of suicidal behavior, only the total score was computed and integrated into study analyses. The HS-R2 demonstrated excellent internal consistency in the current study ($\alpha = .92$).

Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003). The RRS consists of 22 items that collectively measure rumination as defined by Rumination Response Theory (Nolen-Hoeksema, 1991). Psychometric analysis of this scale has demonstrated two specific rumination subtypes: brooding and reflection (Treynor et al., 2003). The brooding subscale (five items) assesses an individual's tendency to dwell on the consequences of negative mood states ("think 'Why do I always react this way?'"). The reflection subscale (five items) measures an individual's tendency to reflect upon why a negative mood is being experienced in efforts to problem solve a solution for the mood disturbance ("write down what you are thinking about and analyze it"). Items are rated on a Likert-type scale from 1 (*Never*) to 4 (*Always*). Higher scores on the RRS and subscales indicate increased tendency to ruminate, brood, and reflect when experiencing a negative mood state. Only the brooding and

reflection subscales were utilized in study analyses as the remaining 12 items of the RRS reflect symptoms of depression (Treyner et al., 2003) as opposed to ruminative processes. Both the brooding subscale of the RRS ($\alpha = .88$) and the reflection subscale ($\alpha = .87$) displayed good internal consistency.

The Defeat Scale (D Scale; Gilbert & Allan, 1998). The D Scale is a 16-item unidimensional measure of the frequency of feelings of failed struggle, losing rank, and general feelings of defeat over the past week. Items are rated on a Likert-type scale with response options ranging from 0 (*Rarely*) to 4 (*Always/All the time*). Sample items include, "I feel defeated by life" and "I feel like I have lost important battles in life." Higher scores on the D Scale can be interpreted as increased frequency of defeat related cognitions. The D Scale demonstrated excellent internal consistency in the current study ($\alpha = .96$).

The Entrapment Scale (E Scale; Gilbert & Allan, 1998). The E Scale is a 16-item measure that assess the extent to which participants feel trapped in their lives and current situations/circumstances. Items are rated on a Likert-type scale with response options ranging from 0 (*Not at all like me*) to 4 (*Extremely like me*). Psychometric evaluation of the E Scale demonstrated two factors: external entrapment (e.g., "I am in a situation I feel trapped in") and internal entrapment (e.g., "I would like to get away from who I am and start again"). High scores on these subscales indicated increased frequency of entrapment related cognitions. Both the internal and external subscales of the E Scale demonstrated excellent internal consistency in the current study ($\alpha = .94$ for both subscales).

Beck Scale for Suicide Ideation (BSS; Beck, Steer, & Ranieri, 1988). The BSS is a 21-item measure that assess suicide ideation and intent for suicide experienced in the past week. Items are rated on a Likert-type scale with possible responses ranging from 0 to 2. Sample items

include, "I have (a) moderate to strong/weak/no wish to live" and "I have no wish to die/a weak wish to die/a moderate to strong wish to die." Elevated scores on the BSS are interpreted as indicating heightened suicide ideation, intent and planning for suicide, and general risk for suicide. Only the first 19 items of this measure specifically reflect the experience of suicide ideation (i.e., within the week prior to administration). The last two items assess the presence of past suicide attempts and the wish to die during these attempts. As study hypotheses focused on the prediction of suicide ideation, only data from the first 19 items were utilized in study analyses. The first 19 items of the BSS demonstrated excellent internal consistency in the current study ($\alpha = .94$).

Procedure

Oversampling recruitment procedures were used to recruit more participants experiencing recent suicide ideation than would normally be represented in a convenience research pool sample of the college student population. Specifically, all participants in the research pool completed the Hopelessness Depression Symptom Questionnaire - Suicidality Subscale (HDSQ-SS; Metalsky & Joiner, 1997) via a pre-screen study at the beginning of each semester. Any students who endorsed some level of suicide ideation on the HDSQ-SS were contacted to participate in the study. A substantially smaller percentage of students that did not endorse recent suicide ideation (approximately five percent) were also recruited to participate. Recruited participants received an invitation via university email that contained a link to complete the study via an online survey system. Participation included reading and agreeing to informed consent materials, completing study measures, and reading/printing debriefing information and a list of local and national referrals for mental health and suicide related concerns. The study procedure was approved by the institution's Institutional Review Board (IRB).

Analytical Strategy

In order to test simple relationships between study variables, bivariate correlation analyses were conducted. Non-parametric bootstrapping procedures with 5,000 bootstrapping samples as outlined by Hayes (2013; model 21) were conducted to test the hypothesized moderated mediation model (see Figure 1). This model was tested four times, once for each RRS subscale (i.e., brooding and reflection) and entrapment. In these analyses, defeat served as the predictor variable (X), entrapment served as the mediating variable (M), suicide ideation served as the outcome variable (Y), and hope (V) served as the variable that moderates the b path of the mediation model (entrapment to suicide ideation relationship). Brooding (W) served as the moderating variable/variable that moderates the a path in the mediation (defeat to entrapment relationship) in the first two analyses, and reflection served as this moderator in the third and fourth analyses.

Results

Means, standard deviations, and bivariate correlation coefficients of study variables are presented in Table 1. Suicide ideation² was positively correlated to defeat, both subtypes of entrapment, brooding, and reflection with moderate effect sizes (Cohen, 1988). Suicide ideation demonstrated a moderately sized negative correlation with hope. Hope was negatively correlated to defeat with a large effect size and negatively correlated with external and internal entrapment, brooding, and reflection with a moderate effect size.

² Despite selective sampling for the recent experience of suicide ideation, the distribution of suicide ideation was positively skewed. Log transformation ($\log + 1$) was used to help correct for this concern, resulting in improved normality in the distribution of this variable. The added natural Log plus one transformation was used instead of just a Log transformation as scores on the BSS could total to zero. Results were conducted with both the original suicide ideation variable and the log transformed variable. No results differed in significance between the use of the two variables. Results utilizing the non-transformed suicide ideation data is reported for the sake of interpretation.

As all possible correlations between internal entrapment, external entrapment, and defeat were all above .80 which suggested a strong relationship potentially bordering redundancy, confirmatory factor analyses were conducted to help further determine the relationship between these three constructs. Two Principal Components Analyses (PCA) with direct oblimin rotation were conducted, the first with a forced three factor solution and the second with a forced two factor solution. The forced three factor CFA suggested a two factor solution, as the third forced factor had an eigen value below 1.0 and contained only two items that loaded on this factor. The forced two factor solution indicated that defeat and entrapment were highly related yet distinct constructs as defeat items most strongly loaded on factor one and entrapment items most strongly loaded on factor two (see Table 2). As factor two had an eigen value above 1.0 and the items that most strongly loaded on this factor were in line with the theoretical distinction between defeat and entrapment, the second factor was retained. Further analyses only include the total score of the Entrapment Scale and not the subscales of external and internal entrapment.

Indirect Effect of Defeat on Suicide Ideation Through Entrapment

Defeat demonstrated a direct effect on suicide ideation ($\beta = .1422$, $SE = .0310$, 95% BC [.0811, .2034]); whereas entrapment did not demonstrate a direct effect on suicide ideation ($\beta = .0043$, $SE = .0270$, 95% BC [-.0490, .0576]). The indirect effects of defeat on suicide ideation through levels of entrapment was not significant ($\beta = .0042$, $SE = .0325$, 95% BC [-.0595, .0682]).

Moderating Effect of Brooding and Reflection on the Defeat to Entrapment Relationship

Brooding significantly moderated the relationship between defeat and entrapment, accounting for 1.01% of the variance of entrapment above and beyond main effects ($\beta = .0231$, $SE = .0105$, 95% BC [.0023, .0439]; see Figure 2). Defeat was positively related to entrapment at

low ($\beta = .6292$, $SE = .0969$, 95% BC [.4378, .8205]), moderate ($\beta = .7309$, $SE = .0685$, 95% BC [.5956, .8662]), and high levels of brooding ($\beta = .8327$, $SE = .0657$, 95% BC [.7029, .9624]).

Reflection did not moderate the relationship between defeat and entrapment ($\beta = .0216$, $SE = .0115$, 95% BC [-.0011, .0442]).

Moderating Effect of Hope on the Entrapment to Suicide Ideation Relationship

Hope significantly moderated the relationship between entrapment and suicide ideation accounting for 5.15% of the variance of suicide ideation above and beyond main effects ($\beta = -.0025$, $SE = .0007$, 95% BC [-.0039, -.0011]; see Figure 3). Entrapment and suicide ideation were positively related to each other at low ($\beta = .1113$, $SE = .0191$, 95% BC [.0737, .1490]) and moderate levels of hope ($\beta = .0608$, $SE = .0187$, 95% BC [.0239, .0978]). Entrapment and suicide ideation were unrelated at high levels of hope ($\beta = .0103$, $SE = .0272$, 95% BC [-.0433, .0640]).

Discussion

The current study investigated the relationship between rumination subtypes (brooding and reflection), hope, and suicide ideation through the lens of the Integrated Motivational-Volitional (IMV) model of suicide. IMV posits that suicide ideation develops through feelings of defeat that lead to increased feelings of entrapment and susceptibility to thoughts of suicide. This theory also posits that specific moderators influence the likelihood that feelings of entrapment develop when an individual feels defeated (threat to self moderators), as well as the likelihood suicide ideation develops when an individual feels trapped (motivational moderators). Three specific hypotheses were formulated: 1) defeat would demonstrate an indirect effect on suicide ideation through increased entrapment, 2) brooding and reflection would both independently function as threat to self moderators, exacerbating the effect that feelings of defeat have on

entrapment with brooding intensifying this relationship the most, and 3) hope would serve as a motivational moderator and buffer the effect that feelings of entrapment have on the experience of suicide ideation (see Figure 1).

Moderated mediation analyses indicated that feelings of defeat did not have an indirect effect on suicide ideation through increased feelings of entrapment as expected. This result indicates that defeat may not increase susceptibility to suicide ideation through the development of feelings of being trapped and unable to cope with life's circumstances. It is important to note that defeat had the strongest correlation to suicide ideation in comparison to all other suicide risk/protective factors. Additionally, bootstrapping analyses demonstrated that defeat had a strong direct effect on suicide ideation. It may be that the indirect effect analysis was not significant in the current sample due to the strength of the relationship between defeat and suicide ideation. In addition, the high correlation between defeat and entrapment would have made it very difficult to detect the indirect effect of defeat on suicide ideation via entrapment. Finally, the selective sampling of those experiencing recent suicide ideation may have influenced this effect, as those with recent ideation would likely be experiencing high levels of both defeat and entrapment as the transition from feelings of defeat to entrapment would likely have occurred prior to experiencing suicide ideation as hypothesized by the IMV model. Future research should continue to investigate the important hypothesis made by the IMV model of suicidal behavior that suicide ideation develops through increased feelings of entrapment brought on by feelings of defeat, as it is possible that these feelings occur simultaneously, and independently demonstrate differential relationships to suicide ideation. These relationships should also be investigated further within clinical populations.

Results indicated that brooding moderated the relationship between feelings of defeat and entrapment. Specifically, participants were most likely to be experiencing elevated feelings of entrapment if they endorsed high levels of both defeat and brooding. It may be that dwelling on the consequences of the negative mood that likely occurs when feelings of defeat are present enhances this negative mood. These enhanced feelings then in turn may leave individuals susceptible to further negative thinking about being powerless to change aspects of the self and one's environment associated with entrapment. Brooding may also inhibit behavioral activation to counteract feelings of defeat which may lead people to feel internally trapped and powerless in their ability to change aspects of themselves and their lives. This hypothesis is consistent with Nolen-Hoeksema & Morrow's (1991) assertion that rumination may be employed as means of coping with distress that actually inhibits problem solving.

In contrast to study hypotheses, reflection did not influence the relationship between defeat and entrapment. This result indicates that an individual's tendency to reflect on negative moods makes them neither more or less susceptible to feelings of entrapment when feeling defeated. Although the cognitive style may not assist in an individual in coping with feelings of defeat, reflection, unlike brooding, may not impede coping. This conjecture is in line with previous research that suggests that reflection may be a less maladaptive cognitive style than brooding (Watkins, 2008), and may explain why the extant literature on the relationship between reflection and suicidality is more inconsistent than that for brooding. It may be that non-judgmental reflection on negative mood states associated with defeat does not prevent nor facilitate coping with negative life circumstances. This reflection thus does not influence the transition from feelings of defeat to entrapment. Taken together, moderated mediation analyses indicate that brooding (but not reflection) may serve as a threat to self moderator in the IMV

theory of suicidal behavior, enhancing an individual's susceptibility to feelings of entrapment and thus the experience of suicide ideation.

As hypothesized, hope served as a motivational moderator in the tested moderated mediation model as it buffered the effect of feelings of entrapment on levels of suicide ideation. Specifically, entrapment and suicide ideation were positively correlated at low and moderate levels of hope scores, but were unrelated when hope scores were high. This result indicates that individuals who regularly set goals, can identify pathways for achieving goals, and have motivation for goal attainment are at less of a risk for experiencing suicide ideation even when experiencing feelings of being trapped by difficult life circumstances and by one's own thoughts, feelings, and behaviors. This result is consistent with previous research indicating that those who engage in goal-related activity are less likely to attempt suicide (Vincent, Boddana, & MacLeod, 2004). Additionally, research has demonstrated that hope moderates the relationships between rumination and symptoms of depression, and rumination and suicide ideation (Geiger & Kwon, 2010; Tucker et al., 2013). Current study results add to a growing body of evidence regarding goal directed cognitions and activity (specifically from the framework of Hope Theory), as potentially strong protective factors against suicide ideation.

Results of the current study should be interpreted with specific limitations in mind. Temporal relationships between study variables could not be ascertained due to the cross-sectional study design. This is particularly important as the IMV model of suicidal behavior posits that feelings of defeat may lead to feelings of entrapment (in the presence of specific threat to self moderators) and these feelings of entrapment may lead to suicide ideation (in the presence of specific motivational moderators). Future research should look to establish temporal and causal relationships between study variables by employing longitudinal and experimental

research designs. Future research should also investigate goal content in relationship to hope and its impact on the IMV model. The current study assessed the broad construct of hope as unrelated to specific values/contents (i.e., career related hope, interpersonal related hope, etc...). As recent research has suggested that certain domains of future thinking may be differentially related to suicide (O'Connor & Williams, 2014), it may be important to investigate how hope related to specific life domains relate to IMV constructs and indicators of suicide risk and resilience.

Specific results of this study should be interpreted with caution. First, defeat and entrapment were highly correlated in the current study (i.e., correlation coefficient above .80) to the point of potential redundancy. This result is somewhat consistent with previous research, as a prospective analysis of the relationship between defeat and entrapment demonstrated a correlation coefficient of .74 (O'Connor et al., 2013). Additionally, confirmatory factor analyses in the current study suggested that the two constructs are highly related yet distinct constructs. Future research should seek to determine more information regarding the relationship between these two important constructs. Also, the result that brooding moderated the relationship between defeat and entrapment should be interpreted with caution due to the small magnitude of this effect. The interaction of brooding by defeat accounted for a small portion of the variance of entrapment (1.01%) above and beyond main effects.

Specific sample characteristics could also be considered limitations to the current study. The majority of study participants self-identified as White/Caucasian and were between the ages of 18-22. This ethnically homogenous sample limits the ability to generalize study results to individuals from ethnic minority groups. This is an important limitation as data suggests that suicide-related outcomes vary as a function of ethnicity (Balis & Postolache, 2008; Drapeau &

McIntosh, 2015). Additionally, the restricted age range of the study sample limits the ability to generalize results to adolescents and middle aged/older adults. Replication of the current study in targeted age groups (e.g., adults over the age of 65 or adolescents ages 10-18) would help determine whether study results accurately reflect the relationships between study variables across different age groups.

As study results should be interpreted with specific limitations in mind, implications for these findings should also be considered. Cognitive-behavioral practices that target perceptions of defeat may be a particularly important aspect of the treatment of suicide risk, as perceptions of defeat demonstrated a strong direct relationship to suicide ideation. These interventions may be most salient for those who regularly respond to negative mood states by brooding on the consequences of the mood disturbance. Decreasing these negative thinking styles may be particularly helpful in reducing the elevated susceptibility to, or intensity of suicide ideation. Additionally, interventions that increase goal setting, identifying means of achieving goals, and enhancing goal motivation may help buffer the effect that negative thinking styles have on suicide risk. Hope therapy (Cheavens, Feldman, Gum, Michael, & Snyder, 2006) or related interventions may supplement standard cognitive-behavioral practices to bolster a client's sense of hope and potentially their suicide resilience.

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Table 1

Means, Standard Deviations, and Correlation Coefficients of Study Variables

<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1. Defeat	-						
2. External Entrapment	.81*	-					
3. Internal Entrapment	.85*	.88*	-				
4. Brooding	.71*	.67*	.72*	-			
5. Reflection	.58*	.59*	.60*	.75*	-		
6. Hope	-.64*	-.53*	-.57*	-.48*	-.32*	-	
7. Suicide Ideation	.56*	.42*	.53*	.38*	.30*	-.40*	-
<i>M</i>	16.97	7.82	4.87	10.49	9.55	106.40	1.16
<i>SD</i>	13.34	9.38	6.40	4.41	4.10	20.35	3.42

Note: * $p < .001$.

Table 2.

Factor loadings and communalities based on a confirmatory factor analysis with oblimin rotation and two factor solution for items from the Defeat Scale (DS) and Entrapment Scale (ES)

<i>Item</i>	<i>Defeat</i>	<i>Entrapment</i>	<i>h²</i>
Defeat Scale 1	.723	.525	.536
Defeat Scale 2	.584	.527	.381
Defeat Scale 3	.871	.597	.759
Defeat Scale 4	.636	.527	.421
Defeat Scale 5	.840	.591	.707
Defeat Scale 6	.834	.588	.696
Defeat Scale 7	.776	.655	.633
Defeat Scale 8	.853	.696	.753
Defeat Scale 9	.513	.496	.303
Defeat Scale 10	.878	.607	.771
Defeat Scale 11	.896	.585	.755
Defeat Scale 12	.832	.526	.694
Defeat Scale 13	.806	.546	.650
Defeat Scale 14	.838	.625	.708
Defeat Scale 15	.820	.563	.673
Defeat Scale 16	.790	.458	.635
Entrapment Scale 1	.740	.854	.776
Entrapment Scale 2	.667	.782	.646
Entrapment Scale 3	.283	.639	.452
Entrapment Scale 4	.663	.824	.698
Entrapment Scale 5	.703	.846	.746
Entrapment Scale 6	.642	.812	.674
Entrapment Scale 7	.571	.784	.617
Entrapment Scale 8	.642	.781	.633
Entrapment Scale 9	.658	.819	.689
Entrapment Scale 10	.580	.856	.733
Entrapment Scale 11	.705	.724	.608
Entrapment Scale 12	.706	.714	.600
Entrapment Scale 13	.779	.815	.759
Entrapment Scale 14	.758	.834	.763
Entrapment Scale 15	.722	.820	.723
Entrapment Scale 16	.767	.785	.717
Extraction Eigenvalues	19.08	1.84	-
Extracted % of Variance	59.61	5.73	65.34

Note. Loadings above .40 are significant. In the case of cross loadings, bolded numbers represent the strongest loading factors.

Figure 1

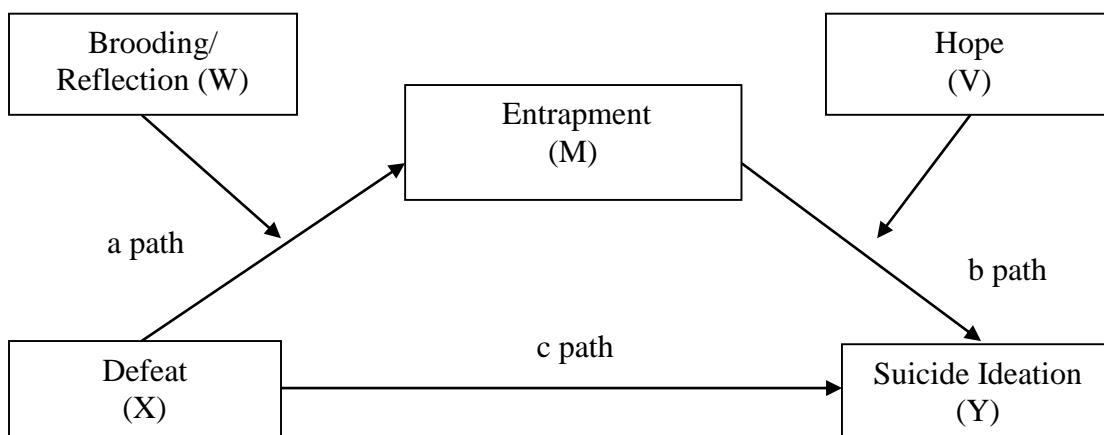
Hypothesized Moderated Mediation Models

Figure 2

Brooding as a moderator of the defeat to entrapment relationship

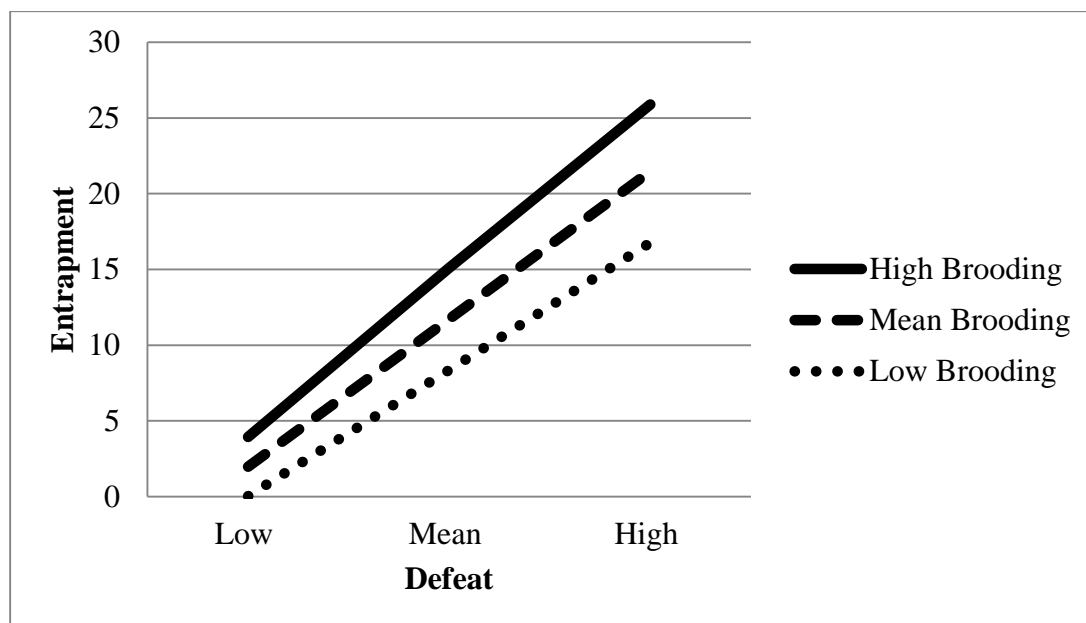


Figure 3

Hope as a moderator of the entrapment to suicide ideation relationship

